

Value Analysis Saves Taxpayers \$4.3 Billion

Value analysis, a systematic approach to project engineering dating back to World War II, is so dependably productive that adopting even half of the recommendations gleaned during the process yields an average 100-to-1 return on investment.

Caltrans, which conducted its first eight-step value analysis in 1969, does even better, achieving \$240 in cost savings for every \$1 it spends on the process. Since 1999, Caltrans has saved California taxpayers almost \$4.3 billion by putting more than 800 projects through the value analysis process before breaking ground.

Caltrans Exceeds FHWA 2015 Value Analysis Goals

Project Metrics	Caltrans Actual	National Goal
Implementation Rate	62%	50%
Return on Investment	240:1	100:1
Savings	7%	5%

For every dollar Caltrans spends on a value analysis study, it receives an average of \$240 back in project cost savings. Those savings are then returned to fund other capital projects. The implementation rate is based on the percentage of recommendations by the Value Analysis team that are implemented.

Saving money, although the measurable result of value analysis, is not its only benefit. The goal is not only to reduce the cost of a project, but to improve its overall value, which may not have an immediate cost savings.

The system was pioneered by General Electric engineers while building propulsion systems for battleships during WWII. The U.S. Navy adopted the practice in the 1950s, and over time all Department of Defense programs benefited. As the process evolved, it was applied to other areas of federal spending and is now required on highway projects costing more than \$50 million.

Since 2000, the Value Analysis Program at Caltrans has used standardized metrics to deliver performance-based practical designs. Projects are complex and have to balance hundreds of competing interests from public stakeholders. Project Development Teams (PDTs) strive to balance these competing interests to build the best project on time on budget and within schedule that meets the needs of the competing stakeholders.

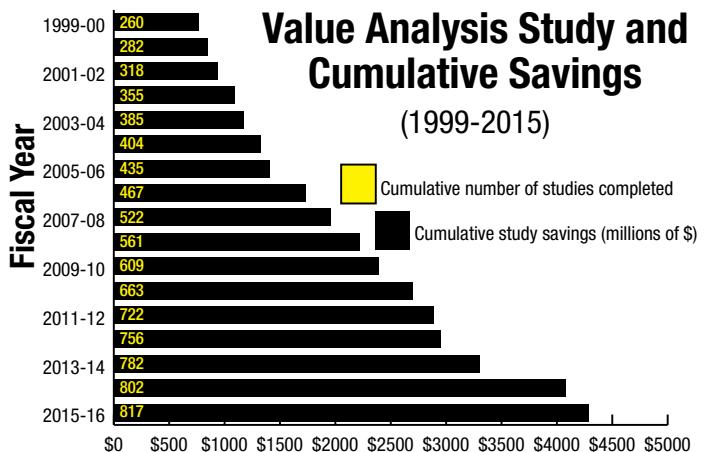
During the value analysis study, a team of experts will recommend alternatives to consider all aspects of the project. Considerations could include stakeholder interest, lifecycle cost of pavement, environmental impacts,

ride quality, delivering the project early to the traveling public, innovative solutions to complicated problems, design speed, sight distance, lane and shoulder widths and bicycle and pedestrian access at the safest level possible.

Maintenance considerations include the overall durability, longevity and maintainability of pavements, structures and systems, ease of maintenance and safety considerations for maintenance personnel.

An analysis also looks at impacts to the public, including traffic disruptions, detours and delays; noise; reduced access to business districts and neighborhoods; and potential effects on air quality, soil erosion and local plants and wildlife. The permanent environmental impacts to all of the above – as well as cultural, recreational and historic resources – are also assessed.

The recommendations by the value analysis team help build consensus with stakeholders, mitigate risk, increase communication, document decision making, balance interest, and improve the overall value of the project.



Value analysis helped District 11 on the State Route 138 rehabilitation projects in Imperial County. Three large projects were studied together to coordinate construction activities, traffic management and environmental impacts. These projects required coordination with the Bureau of Land Management, California State Highway Patrol, Arizona Department of Transportation, the Agricultural Inspection Facility, California Border Patrol, and Imperial County officials. Community members wanted Caltrans to contain construction in its right-of-way. The value analysis team recommended five alternatives that eliminated the use of local street detours and streamlined the construction by building temporary median cross-overs to divert traffic to a single side.

In the end, good value is achieved when the necessary system performance can be accurately defined and delivered at the lowest lifecycle cost.

Source: Troy Tusup, Caltrans Value Analysis Program Manager